

NON-PUBLIC?: N  
ACCESSION #: 9506080185  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Sequoyah Nuclear Plant (SQN), Unit 2 PAGE: 1 OF 5

DOCKET NUMBER: 05000328

TITLE: Turbine and Reactor Trips Resulting From Actuation of the  
Main Generator Neutral Overvoltage Relay  
EVENT DATE: 04/28/95 LER #: 95-002-00 REPORT DATE: 05/30/95

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 99

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: J. W. Proffitt, Compliance Licensing TELEPHONE: (615) 843-6651

COMPONENT FAILURE DESCRIPTION:  
CAUSE: X SYSTEM: FK COMPONENT: GASK MANUFACTURER: W120  
REPORTABLE NPRDS: YES

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On April 28, 1995, at 2031 Eastern standard time with Unit 2 operating at 99 percent power, the turbine tripped followed by a reactor trip as a result of operation of the main generator neutral overvoltage relay. The immediate cause of this event was attributed to a bus duct gasket that came loose and caused a ground. The ground was on the electrical bus leading from the main generator to the 'C' phase main transformer. The gasket provided a path for electrical leakage to ground that was detected by the neutral overvoltage relays. The actuation of the relays tripped the generator resulting in subsequent turbine and reactor trips. The relays actuated, as designed, to prevent damage to other components. The cause of this event is ineffective/inadequate corrective action of a previous similar event. As a result of a reactor trip in 1984, a preventive maintenance (PM) instruction was revised to periodically inspect the gaskets and bus alignments at the transformer doghouses and rework or replace as required. The PM lacked sufficient detail to ensure

that the proper inspection and repairs were accomplished. The PM has been revised to provide sufficient detail to ensure proper inspection of the gasket. The Unit 1 transformers will be inspected during the next outage.

END OF ABSTRACT

TEXT PAGE 2 OF 5

## I. PLANT CONDITIONS

Unit 2 was in power operation, Mode 1, at approximately 99 percent power.

## II. DESCRIPTION OF EVENT

### A. Event

On April 28, 1995, at 2031 Eastern standard time (EST), the turbine tripped followed by a reactor trip as a result of operation of the main generator neutral overvoltage relay (EIIS Code AIT). The immediate cause of this event was attributed to a bus duct gasket (EIIS Code FK) that came loose and caused a ground. The ground was on the electrical bus leading from the main generator (EIIS Code EL) to the 'C' phase main transformer. The gasket provided a path for electrical leakage to ground that was detected by the neutral overvoltage relays. The actuation of the relays tripped the generator, resulting in subsequent turbine and reactor trips. The relays actuated, as designed, to prevent damage to other components. The designated spare transformer was in service as the 'C' phase main transformer.

### B. Inoperable Structures, Components, or Systems that Contributed to the Event

None.

### C. Dates and Approximate Times of Major Occurrences

April 28, 1995 A turbine trip and subsequent reactor at 2031 EST trip were initiated because of the loss of the main transformer.

April 28, 1995 Operators initiated RCS boration in

at 2043 EST accordance with abnormal operating procedures because of the RCS Temperature decreasing below 540 degrees Fahrenheit (F). Manual control of auxiliary feedwater was initiated in accordance with procedures.

April 28, 1995 Operators completed boration to the at 2049 EST RCS.

April 28, 1995 Operations personnel stabilized the at 2105 EST plant in a safe condition in Mode 3.

#### D. Other Systems or Secondary Functions Affected

None.

TEXT PAGE 3 OF 5

#### E. Method of Discovery

The turbine and reactor trips were annunciated on the main control room panels.

#### F. Operator Actions

Control room personnel responded as prescribed by emergency procedures. They promptly diagnosed the plant condition and took the actions necessary to stabilize the unit in a safe condition and maintained the unit in hot standby, Mode 3.

#### G. Safety System Response

The plant responded to the turbine and reactor trips as designed.

### III. CAUSE OF EVENT

#### A. Immediate Cause

The immediate cause of the event was attributed to a bus duct gasket that came loose and caused a ground. The ground was on the electrical bus leading from the main generator to the 'C' phase main transformer. The gasket

provided a path for electrical leakage to ground that was detected by the neutral overvoltage relays. The actuation of the relays tripped the generator resulting in subsequent turbine and reactor trips. The relays actuated, as designed, to prevent damage to other components. The designated spare transformer was in service as the 'C' phase main transformer.

#### B. Root Cause

The root cause of this event was ineffective/inadequate corrective action of a previous similar event. As a result of a reactor trip in 1984 a preventive maintenance (PM) instruction was revised to periodically inspect gaskets and bus alignments at the transformer doghouses and rework or replace as required. The PM lacked sufficient detail to ensure that the proper inspection and repairs were accomplished.

#### C. Contributing Factors

A contributing factor to this event was that at the time of the previous failures, the designated spare transformers were not inspected and repaired. At that time, the designated spare transformers were not going to be utilized for service; therefore, the spare transformers were not inspected. In 1990, the spare transformers were inspected and placed in service. Since that time, the spare transformers have been reinspected, and the condition of the gaskets was not properly assessed.

TEXT PAGE 4 OF 5

### IV. ANALYSIS OF EVENT

During the transient, the RCS temperature decreased below 540 degrees F. The operators manually injected boric acid into the RCS in accordance with plant procedures. In addition, the operators took manual control of AFW in accordance with procedures because of RCS temperature decreasing below 540 degrees F. A minimum RCS temperature of 539.5 degrees F occurred during the transient. The unit was stabilized in Mode 3.

The other plant responses during and after the unit trip were consistent with responses described in the final safety

analysis report and accordingly, the event did not adversely affect the health and safety of plant personnel or the general public.

## V. CORRECTIVE ACTION

### A. Immediate Corrective Action

Control room personnel responded as prescribed by emergency procedures. They promptly diagnosed the plant condition and took the action necessary to stabilize the unit in a safe condition.

### B. Corrective Action to Prevent Recurrence

The PM has been revised to provide sufficient detail to ensure proper inspection of the gasket. A work request has been initiated to inspect the Unit I transformers during the next outage.

In addition, the SQN Management Review Committee is reviewing open Level A corrective action documents to ensure that significant problems are being addressed effectively and in a timely and cost effective manner. A focus area team has been established to reassess the significance and risk associated with existing, generally known problems dating back to early 1993 and their associated corrective actions. The recommendations resulting from this team review will be established to address the findings.

## VI. ADDITIONAL INFORMATION

### A. Failed Components

The gasket material, Part No. 868A8151H36, was manufactured by Westinghouse.

TEXT PAGE 5 OF 5

### B. Previous Similar Events

A review for previous events identified two similar events that resulted in reactor trips that were initiated from a loose gasket causing a short. LER 50-327/84036 was a reactor trip that resulted from a neoprene gasket coming

loose and causing a phase-to-ground fault. The gasket was replaced and sealed with RTV to secure the gasket in place. The corrective actions included inspection of the other Unit 1 transformers and revising PM to periodically inspect gaskets and bus alignments at the transformer doghouses and rework or replace s required. LER

50-328/84016 was a reactor trip as a result of the same problem. The gasket was replaced and sealed with RTV to secure the gasket in place. Additional corrective actions included inspection of the other Unit 2 transformers. It has been determined that the designated spare transformers on each unit were not inspected until 1990. The PM utilized to inspect the subject gasket was inadequate to prevent recurrence of the event.

## VII. COMMITMENTS

None.

ATTACHMENT TO 9506080185 PAGE 1 OF 2

TVA

Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy,  
Tennessee 37379

May 30, 1995

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 2 -  
DOCKET NO.

50-328 - FACILITY OPERATING LICENSE DPR-79 - LICENSEE EVENT REPORT  
(LER)  
50-328/95002

The enclosed LER provides details concerning an automatic turbine and reactor trip resulting from actuation of the main generator neutral overvoltage relay. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv) as an event that resulted in the automatic actuation of engineered safety features, including the reactor protection

system.

Sincerely,

R. J. Adney  
Site Vice President

Enclosure  
cc: See page 2

ATTACHMENT TO 9506080185 PAGE 2 OF 2

U.S. Nuclear Regulatory Commission  
Page 2  
May 30, 1995

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